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Multiple modality is spread across the wider Atlantic region, both within individual varieties and across variety types. Based on corpus-based evidence, it is argued that first and second tiers of multiple modals carry high diagnostic value and that regionally separated Anglophone areas differ in their preference for first- and second-tier components in modal constructions. Semantics is a diagnostic typologically as there exists a continuum, the "Multiple Modal Belt," which consists of three main clusters that are primarily differentiated by their respective compositional preferences: North American varieties favor epistemic 'weak probability' elements (~might) as first-tier modals, Caribbean varieties 'high probability' or 'certainty' (~must). Multiple causation and contact-induced change are offered as explanations for supra- and sub-regional variation in the Atlantic region, and there is strong evidence that the preference for second-tier components originally represented Scottish origin and subsequent diffusion with locally differing contact scenarios. Locally distinct preferences for semantic compositionality – particularly based on preference for first-tier 'high-probability' modals – are used to model a geo-typological clustering of varieties throughout the wider Atlantic region.

Keywords:
Multiple modality, dialect typology, Atlantic Englishes, semantic tier probability, English language change

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Introduction

Multiple modals (MMs), alternatively termed 'compound modals' (Mufwene 2012: 148), 'serial modals' (Corrigan 2011: 42) or 'stacked modals' (Peters & Bembridge 2016: 1), such as *might could*, *may can*, *must can, would could*, or *will can*, have been researched in terms of syntactic, semantic, and pragmatic characteristics, historical origins and geographical distribution. MMs are in general usage and have high social acceptance in the southern United States, where they are widespread, with an estimated 20 or 30 million speakers (Nagle 1994: 199, Battistella 1995: 20, de la Cruz 1995: 77). They are often identified as a US Southernism, with *might could* having the widest distribution both diachronically and regionally (Hasty 2012, Tillery 2015), but are also found in African American Vernacular English (AAVE) (Labov et al. 1968, Labov 1972), the Scottish Lowlands (where they are obsolescent with the exception of prototypical Scottish *will can* and *should can*, Bour 2014), neighboring Northumberland in Northern England, Ulster in Northern Ireland, Caribbean Creoles (Butters 1991, Fennell 1993, Fennell & Butters 1996, Bour 2015), and the South Atlantic (Schreier 2003, 2008).

This paper differs from previous research on multiple modals, which concentrated mostly on individual varieties and historical roots, by adopting a holistic perspective on MM distribution in the Anglophone Atlantic. The framework is grounded within a geo-typological approach to multiple modality. The following research questions are addressed: (1) Where are MMs found in the Anglophone world today and how are they distributed geographically and typologically?; and (2) How did a supraregional MM network develop into separate clusters? We use the online databases *MultiMo* and eWAVE as main data sources, offer a holistic regional and typological taxonomy of MMs in US/Caribbean contexts, and start with a descriptive and regional profile of regions and varieties where they are reported.

A descriptive profile of multiple modality in Atlantic Englishes

Modal combinations are subject to syntactic and pragmatic variation (see Zullo unpubl. ms. for a more detailed discussion), although there are individual combinatory preferences. For instance, whereas *might could* is considered the "queen of combinations" (de la Cruz 1995: 82) in the southern US, (Lowland) Scottish English has "ubiquitous *will can*" (Bour 2015: 158). More generally, *might* and *may* – and less

frequently *must* – occur as preferred first-tier elements in Southern American English (SAE; Boertien 1986, Mishoe & Montgomery 1994, Nagle 1994), whereas *can* or *could* are the most common second elements in British varieties (Brown & Miller 1975, Macafee 1980, Brown 1991). In terms of semantic properties, the archetypal alignment is epistemic modal (E) + root modal (R), the latter usually in its dynamic or deontic sense. However, MMs may also include marginal or quasi-modals, as in *might ought to*, *might should ought to*, or *might used to could* (ex. 1-3):

1. E + E: I *might could* make up one, but I don't know (Wolfram & Christian 1976: 90); If they'd just laid down, the snakebite *might wouldn't* have killed a lot of them (Montgomery 2004: 253);
2. R + E: Pearl *can might* cook supper (Coleman 1975: 219);
3. R + R: She *used to could* run the marathon (Mashburn 1989: 133).

The same applies for triple modality (ex. 4-6):

4. E + E + R: It's a long way and he *might will can't* come, but I'm gonna ask (Mishoe 1991 in Montgomery & Reed);
5. E + R + R: He *might used to could* do it (Brown 1991: 76);
6. R + E + R: I *should might ought to* have been listening to Johnny Cash instead of studying (Coleman 1975: 218).

Montgomery (1997: 206) reports a total of 27 MM combinations in Scottish English (ScotE), whereas "the range of combinations found in Appalachian [AppE] and [SAE] appears to be open-ended", with over 50 attested combinations overall (particularly so if quasi-modals – e.g. *better*, *supposed to*, or *need to* – are included). There is an extensive range with *may, might, would, must, can, could, used to* and *will* as first tiers (Table 1).

Table 1 – List of MM combinations attested in the United States, Scotland, and Ulster*

UNITED STATES				
may could *may should* *may would* *may might* *may can* *may will* *may shall* *may oughta* *may need to* *may supposed to* *may used to* *may didn't* *may might can* *may might must can*	*might could* *might oughta* *might can* *might should* *might would* *might better* *might supposed to* *might've used to* *might should oughta* *might should better* *might had oughta* *might woulda had oughta* *might will can't*	*would better* *would might* *would used to* *should oughta* *should might better*	*must can* *must(a) could(a)* *must would* *must ought* *must didn't* *can might* *can would* *could might* *oughta could* *oughta would* *oughta will* *oughta might should*	*used to could* *used to* *would* *used to did* *will ('ll) might*
SCOTLAND				
may can	*might could* *might should* *might would* *might could have to* *might used to could*	*will can* *will could* *will might can* *will should can* *will need to can* *will have to can* *would could* *would used to* *could can to* *should ought to*	*mustn't could* *must can* *must should* *must would* *have to can* *bound to could* *need to can* *gonna can*	*used to could* *used to* *would* *used to* *widnae* *used to might*
NORTHERN IRELAND/ULSTER				
may can	*might could* *might should*	*will can*	*should ought to*	*used to could* *used to* *would*

*Data for the United States come from Butters (1973), Coleman (1975), Herndobler and Sledd (1976), Boertien (1986), Di Paolo (1986, 1989), Mashburn (1989), Mishoe and Montgomery (1994), and Montgomery (2004); for Scotland: Brown (1991), Miller (1993), Montgomery and Nagle (1994), and Bour (2014); and for Ulster: Montgomery and Nagle (1994: 102)

While some of these combinations are sporadically attested (elicitation, very few informants), the most common ones in the US South are *might could*, *might should*, *might would*, *might ought to*, *might can*, *may can*, and *should ought to* (Butters 1973, Coleman 1975, Di Paolo 1986, Di Paolo 1989, Boertien 1986, Mishoe & Montgomery 1994, Nagle 1994, Hasty 2012). According to Kortmann & Wolk (2012: 929), MMs are one of the "top diagnostic features for North America" – it should be emphasized that they are not exclusive to American English, of course, but more widespread when compared to many other Anglophone areas, e.g. in Asia or in the Southern Hemisphere. ScotE and Northern England English (NEngE), by contrast, prefer *will*

can, *will could*, *would could, should can*, *should could*, *might can*, *must could*, and *might could* (Miller and Brown 1975, Macafee 1980, Brown 1991, Bour 2014), although MMs occur less frequently and may be subject to an urban/rural divide. According to Beal (2004: 127, citing examples from McDonald (1981: 186-7)), *would could* "only appears in the urban area [of Tyneside] if a negative is involved, but also appears in the positive in rural Northumberland":

7. He *wouldn't could've* worked, even if you had asked him (Tyneside)
8. A good machine clipper *would could* do it in half a day (rural Northumberland)

The most widely offered explanation for the diachronic spread of multiple modality is that it originated in southern Scotland (Montgomery 1989, Fennell 1993, Nagle 1994, Montgomery & Nagle 1994, de la Cruz 1995, Fennell & Butters 1996), although it was recorded rather late here (*will can* in Margaret Calderwood's letters in 1756, *may can* in the work of Alexander Ross in 1768 (*DSL*, supplement)), so they may have been in use before that date but were simply not documented (Montgomery & Nagle 1994: 103, Montgomery 1998: 93, Nagle 1995: 209). We find a similar scenario in the US: Schneider & Montgomery (2001) reported no evidence in Antebellum overseers' letters, and the earliest attestation in the US is *might could* in a pupil's notebook in North Carolina from 1856 (Eliason 1956: 245, in Montgomery & Nagle 1994: 99). Notwithstanding, it is widely accepted that British donor sources had a direct impact here. For one, there is strong socio-historical evidence: Settlers from the Scottish Lowlands (and Northern England) migrated to Ulster, from where more than 200,000 Scotch-Irish moved on to the New World in the late 17th and 18th centuries. They first settled in Pennsylvania, later moving southward through Appalachia and populating "North Carolina, Kentucky, Tennessee, […] South Carolina and Georgia" (de la Cruz 1995: 84). Even though these areas differ in their MM combinations (see Table 1), *might could, used to could*, and *might can* are the most frequent combinations shared (Montgomery & Nagle 1994: 103). Butters (1991), Fennell & Butters (1996), and Bour (2015) looked into MM distribution in English-based creoles in the Caribbean and North America, suggesting a putative Caribbean creole influence on the modal system of emerging SAE. They argued in favor of an alternative origin of MMs in American varieties, i.e. a "dialect root" (Schreier 2020) that was simultaneously adopted from Scottish/Ulster/Northern England donor varieties and restructured Caribbean

Englishes that had inherited it from British ancestral varieties. We will provide further evidence for contact of differing MM systems in the context of a multiple modal belt below.

Methodology

The starting points for this study were *MultiMo* (Montgomery & Reed, http://artsandsciences.sc.edu/multimo/welcome), an online database of attested MMs in predominantly American and British varieties, and the electronic World Atlas of Variation in English (*eWAVE*; Kortmann & Lunkenheimer 2012), which was set up and constructed to allow for a dialect-typological analysis of the morphosyntax of World Englishes. The latter contains information on 235 morphosyntactic features in 76 English varieties, grouped in 8 world regions. These are categorized into 5 variety types according to Kortmann and Lunkenheimer (2012: 3-4), i.e. low-contact traditional dialects (L1s: regional non-standard mother-tongue varieties), high-contact native Englishes (L1: transplanted L1 Englishes […], colonial standards […], language shift varieties […] and standard varieties), indigenized second languages (L2: non-native varieties that have a certain degree of prestige and normative status in their political communities […] and [those] that compete with local L1s), English-based pidgins (contact languages that developed for communication between two groups who did not share the same language), and English-based creoles (contact languages that developed in settings where a non-English-speaking group was under strong pressure to acquire and use some form of English, while access to its L1 speakers was severely limited, e.g. in plantation settings). The eWAVE establishes a feature's (variable) presence and degree of pervasiveness on a 6-point scale (A 'pervasive'; B, 'feature is neither pervasive nor extremely rare'; C 'feature exists, but is extremely rare'; D 'feature is absent'; ? 'no information on feature is available'; X 'don't know'). Pervasiveness "is calculated as all A-ratings for a feature plus 0.6 times the B-ratings for the same feature plus 0.3 times the C-ratings, divided by the sum of all A-, B- and C-ratings for the feature. This value is then multiplied by 100 and expressed as a percentage" (Kortmann & Lunkenheimer 2013: Home page, Introduction, eWAVE 2.0 Statistics, par. 2).

Using 84 different sources (electronic corpora, available MM corpora, general literature, personal communication), a corpus of all possible MM sequences was

compiled (*types* per locality), amounting to 549 *tokens* i.e. the total sum of all MMs reported. For each, we annotated source, publishing year, variety, variety type, region and/or locality where the feature is used or was elicited, combinatory preference, semantic meaning of each tier, placement of negation (if known), placement of past auxiliaries (if known), and whether there is tense-matching or not (see

List *of English varieties analyzed (in alphabetical order; with abbreviations, where applicable)*

African American English (AAE), both rural (RAAVE), and urban (UAAVE)

Antiguan Creole (AntC)

Appalachian English (AppE)

Bahamian English (BahE)

Bahamian Creole (BahC)

Bajan (BajC)

Belizean Creole (BelC)

Chicano English (ChicE)

Colloquial American English (ColAmE)

(pure) Fiji English (PFijE)

Gullah

Guyanese Creole (GuyC)

Hawai'i Creole (HawC)

Jamaican Creole (JamC)

Maltese English (MalE)

New Zealand English (NZE)

Nigerian Pidgin (NigP)

Northern Irish English (NIrE)

Ozark English (OzE)

Scottish English (Sc

Southeast American Enclave Dialects (SAED)

Saramaccan

Sranan

St. Helenian English (StHE)

Tristan da Cunha English (TdCE)

Vincentian Creole (VinC)

Table 12 in the Appendix).

In a next step, MMs were classified according to the meaning of their components. Following Palmer (1979) and Nagle (1994), first-tier, second-tier, and third-tier modals were subcategorized into epistemic, dynamic, deontic, root for quasi-modals with

aspectual meaning (e.g. *used to* or *fixing to*), and other auxiliaries such as *don't* or *did*. Each modal received a semantic designation; 'epistemic *might*' and 'deontic *must*' were translated into 'weak probability/possibility' and 'strong obligation,' respectively (Table 13 in the Appendix illustrates how this was performed with the remaining modals). This allowed each element of a MM combination to be semantically quantified in relation to the entire inventory, and percentages could thus be calculated individually for each tier on the total number of combinations for each variety showing the mean proportions of different meanings. For instance, the two MMs *may can* and *must can* are reported in Tristan da Cunha English so that two first-tier modals out of two MM-combinations, i.e. 50% of the inventory, denote 'extreme certainty' and 'weak probability,' respectively, whereas two second-tier modals, i.e. 100% of the inventory, denote 'dynamic ability'. Some elements could not be categorized as either epistemic, dynamic or deontic; some could not even be generally identified as root. This explains why percentages do not add up to 100 for each tier and why the numbers decrease in the second and third tiers (see below). Our corpus was designed to analyze MMs in terms of inventories, possible sequences, and first- or second-tier elements, as found in regions, varieties, or variety types.

Results and analysis

A regional profile of multiple modality

Looking into construction- and region-specific variation first, we note that the distribution of the modal senses differs across tiers. All varieties considered, we note the following hierarchies for tier 1:

epistemic (27.7%) > root aspectual (16.5%) > deontic (12.2%) > dynamic (7.2%).

and for tier 2:

dynamic (39.8%) > deontic (17.0%) > epistemic (11.7%).

The percentages are the result of all proportions of each semantic element within their single inventories in their respective varieties averaged across all varieties. The two hierarchical sequences show that the most common tier combination, in terms of semantic compositionality, is epistemic + dynamic.

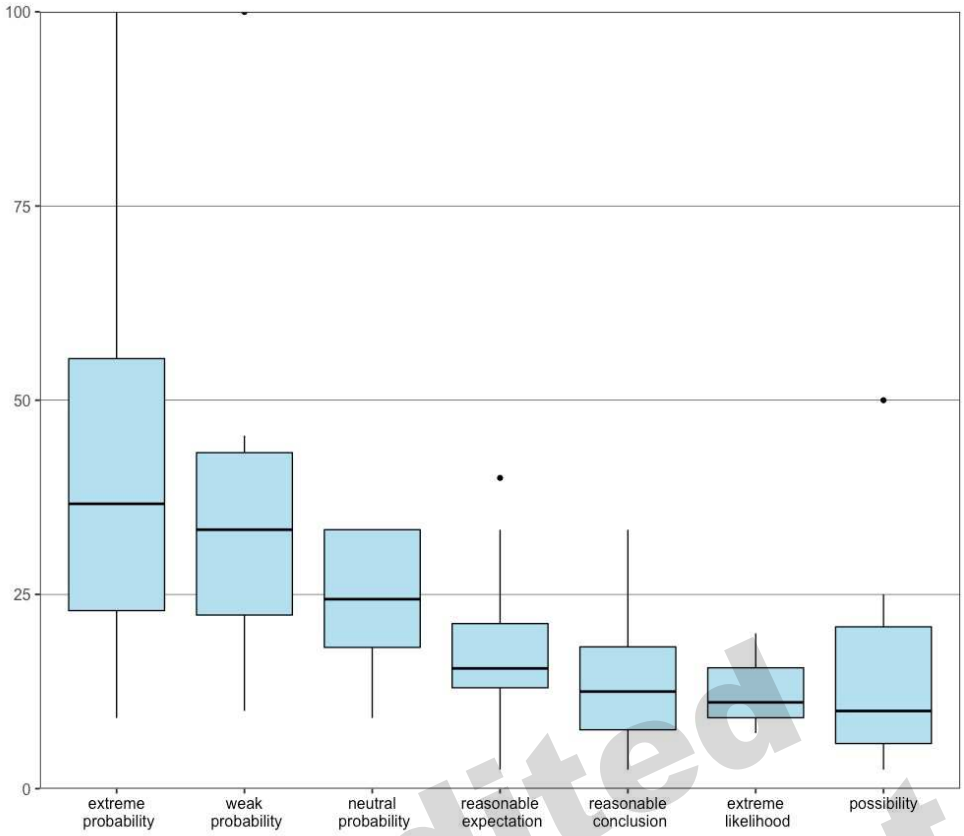

Figure 1 - Average distributions in percentages of the different epistemic meanings for first-tier elements

As for component meaning, the initial element in a MM combination most commonly denotes 'extreme certainty' or 'weak probability,' i.e. averagely 41.9% and 38.8% of variety inventories across all varieties (see Figure 1), whereas the second modal most frequently carries a sense of dynamic ability (39.8%, see Figure 2). Most common MM combinations would thus be *must can*, *must could, might can*, and *might could*. These are followed by first-tier 'neutral probability' (24.6%) and second-tier 'strong obligation' (24.2%): *may can*, *may could*, *might have to*, *may have to* and *must have to*.[1] Third-tier modals (e.g. *may might can*) are much rarer; if reported at all, they are typically dynamic or deontic (e.g. *might used to could* or *may should ought to*; 8.0% and 7.5%, respectively).

[1] *Must have to* is a redundant construction, whereas *might have to* is grammatically acceptable in StE. These examples were added because certain varieties have highly grammaticalized *have to* (e.g. *hafi* or *gafu*), thus having shifted towards being quasi-core modals instead of semi-modals. This is in line with emerging quasi-modals such as e.g. *useta, finna*, or *liketa* (see further discussion below).

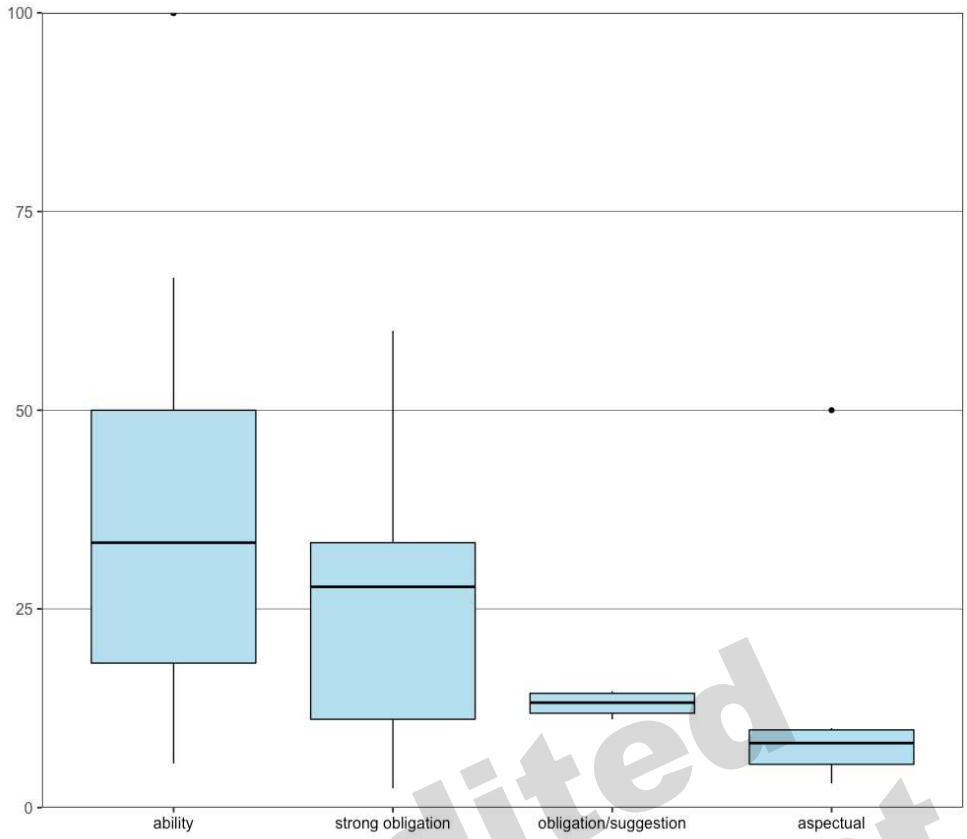

Figure 2 – Average distributions of the different meanings for second-tier elements (in percentages)

However, global semantic trends should not be taken at face value, for the most frequent first- and second-tier elements may not necessarily combine in all varieties. As this depends on the total number of MM constructions reported, general conclusions are particularly problematic for dialects where only a small number of MM sequences are reported (see below).

In a second step, we complement the semantic analysis with a geographical and typological perspective on modal variation in World Englishes. In the eWAVE, MMs are attested in a total of 30% (24 out of 76 varieties), with a rather high overall pervasiveness rate of 61% (see

Table *2*): they are reported in the British Isles (Northern Ireland, Scotland), North America (Appalachian and Ozark Mountains, Southeast American Enclave Dialects, Colloquial American English, African American English, Chicano English, Gullah), the Caribbean (Bahamas, Jamaica, Guyana), Africa (Nigeria), the South Atlantic (St. Helena, Tristan da Cunha), the Pacific (New Zealand, Fiji, Hawai'i), and Malta (see the Appendix for a list of all varieties included, with abbreviations where applicable). Our research complements this picture:

Table 2 lists the global and typological diffusion of MMs through eWAVE and additional data (varieties for which MMs are attested but not included in the eWAVE are in **bold** font; the ones in *italics* were discarded due to lack of data or reported absence of MMs). As expected, MMs are common in North America, reported in all varieties with the exception of Earlier AAVE. On the other hand, contrary to the picture resulting from the automatic querying in *eWave*, MMs appear to be diagnostic in the Caribbean as well, albeit to a lesser extent, being attested in 10 out of 13 varieties.

Table 2 – Multiple Modal varieties in eWAVE (Feature 121) and additional sources

	L1 Varieties		**L2 Varieties**	**Pidgins & Creoles**
	low-contact L1	***high-contact L1***		
British Isles	North of England E (C) Scottish E (C) ***Orkney and Shetland***	*[Maltese E]* (C)		
Africa				*Nigerian Pidgin (B)*
South Atlantic		St. Helenian E (C) Tristan da Cunha E (B)		
America	Appalachian E (B) Ozark E (A) Southeast Am. Enclave dialects (A)	Colloquial American E (B) Urban AAVE (B) Rural AAVE (B)	Chicano E (B)	Gullah (A)
Caribbean		Bahamian E (B)		Jamaican C (A) Bahamian C (C) **Bajan C** **Vincentian C** **Belizean C** **Antiguan C** Sranan (A) Saramaccan (A) Guyanese C (A)
Pacific		*New Zealand E (B)*	*Pure Fiji E (B)*	Hawai'i C (C)

Table adapted from Kortmann & Lunkenheimer (2012: 2-3). Varieties in eWAVE (categorized per language type and grouped by world region) featuring F121 (MMs) as A, B, or C ratings (in parentheses). Even though it does not belong to the British Isles, MalE was included here, for it is the only European English-speaking isolate.

We now move on to look at the various regions in more detail, starting with North America.

North America

MMs range from New York and Delaware into Indiana and Illinois in the North, to Florida and as west as Texas in the South, thus covering the entire western and southern Appalachian region. The highest concentration of combinations is in the

southern US (Di Paolo 1989, Labov 1968), particularly North Carolina, Texas, South Carolina, and Georgia, with 33, 31, 29, and 20 different possibilities (see Figure 3).

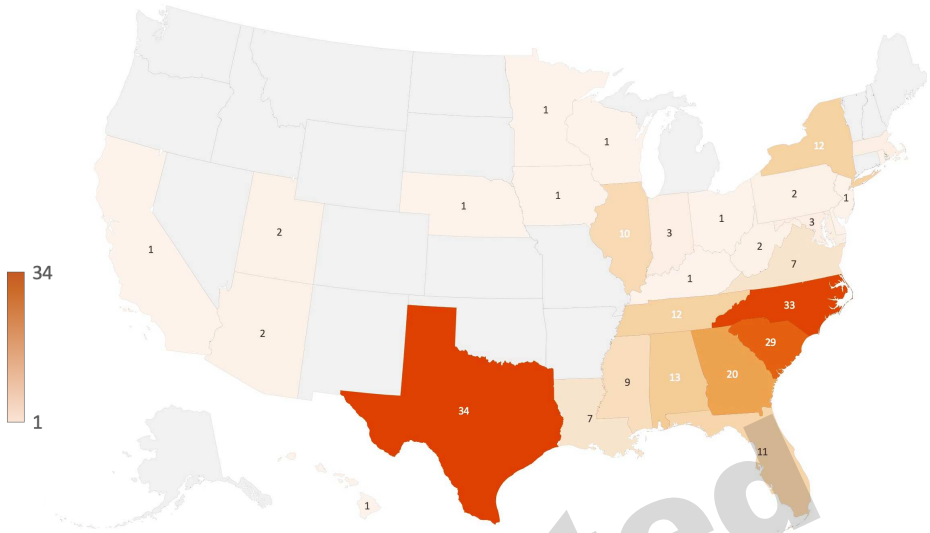

Figure 3 - Number of MM combinations in different US states

MMs are attested in typologically distinct varieties: conservative Anglo-American varieties such as AppE and OzE (e.g. Dumas 1987), isolated enclave dialects such as Lumbee English (Wolfram 2004a: 298), rural and urban ethnolects such as AAVE, indigenized second-language dialects such as ChicE, and creoles like Gullah or Hawai'i Creole. AppE and OzE have similarities in their MM combinations (Montgomery 2004: 252-3, Dumas 1987: 2, Schneider 2004a: 1107;

Table *3*).

Table 3 – List of MMs attested in Appalachian English and Ozark English

Appalachian English				
may can	*might could* *might would* *might should* *might can*	*'ll might*	*should ought to* *could might*	*used to could* *used to did* *would used to*
Ozark English				
may can *may could*	*might could* *might can* *might ought to*			*used to could* *used to did*

Data from: Christian et al. (1984), Bigham (1999), Montgomery (2004) for AppE and Dumas (1987) and Schneider (2004a) for OzE.

Both varieties have *used to could* and *used to did(n't)*, which are the most frequently used combinations in OzE (Schneider 2004a: 1107). *Might could* is common in both dialects, whereas *could might* and archaic *mought could* are still found in AppE (Montgomery 2004: 252). There are no reports of *might should* in OzE, which is less common than *might ought to* (Ellis, p.c. 2017). This is a remnant of British donors: *used to could* and *might could* are found in Ulster, Scotland, and Northern England. AppE also has first-tier *will* in *'ll might*, which is similar to ScotE *'ll might can* (see Schneider 2004b, Montgomery 1991, Montgomery & Melo 1989, and Bailey & Smith 1989). Notwithstanding these minor differences, the two MM systems resemble each other closely.

MMs have also been reported in ChicE, a "bilingual dialect" or "contactual dialect" (Penfield & Ornstein-Galicia 1985: 3), and urban and rural varieties of AAVE, which has more attested combinations than ChicE (Table 4), particularly with initial epistemic *might*. The most frequent MM combinations in AAVE are *might could, might better* and *useta could* (Labov et al. 1972: 272). *Might* commonly co-occurs with negated semi-auxiliary *do* (Labov et al. 1968) and first-tier epistemic *must* with *can, could(a)* and *don't*, thus representing a moderately common first-tier element in AAVE.

Table 4 – List of MMs in African American Vernacular English

African American Vernacular English				
may can	*might could*	*must can*	*should can*	*used to could*
may could	*might would*	*must(a) could(a)*		*used to would*
may should	*might should*		*ought(a) could(a)*	
may would	*might ought to might can*	*must be can*		*supposeta could*
may might must can		*must don't*		
	might don't			
	might better			

Data from: Labov et al. (1968), Labov (1972), Herndobler & Sledd (1976), and Butters (1991)

Overall, the inventory is smaller than in white SAE; triple modals are not attested, although a quadruple modal (*may might must can*) could be observed. Wolfram (2004b: 329) claims that MMs are "more robust in rural Southern versions" of AAVE than in urban dialects. It is not clear whether Earlier AAVE – "the type of English that slaves of African origin and their descendants acquired after having been deported to the southern part of the US" (Kautzsch 2012: 126) – had MMs, but Cukor-Avila (2001) argues that they were robust in 20th-century AAVE.

The Gullah MM system contrasts with AAVE and white Southern dialects, both in overall size and permitted tier combinations. Gullah developed in the rice and indigo plantations of the coastal areas of Georgia and South Carolina in the "early 18th century, a few decades after the first British colonists and their African slaves settled in Charleston, from Barbados, in 1670" (Mufwene 2004: 357). MMs are much less frequent in Gullah, but we find *must be coulda*, as in:

9. dem gata *must be coulda* go fast 'those [alli]gators must have been able to move fast' (Mufwene 2012: 148).

Wentworth (1944) cites *might could*, *might would*, and *might kin*, while Cunningham (1992: 61-2) divides Gullah MMs into two groups, i.e. left-tier *may*, *might*, *must*, *should*, and *will* and right-tier *can*, *could*, *would*, *have fa*, and *fa*, although not all these may be combined for "what might be arbitrary exclusion […] or semantic incompatibility" (Fennell & Butters 1996: 271). The modal *fa* 'should' relates Gullah to the Caribbean Creoles, where some form of this auxiliary is used, as e.g. *fi* or *fu*, but Gullah prefers first-tier *may* and *must* (see Table 5).

Table 5 – List of MMs attested in Gullah

Gullah		
may can	*might could*	*must have fa (fuh)*
may will	*might can*	*must fa*
may could		*must be could*
may would		

Data from: Wentworth (1944), Cunningham (1992), and Mufwene (2012)

The Caribbean

Mesolectal and basilectal varieties of Jamaican Creole (JamC) have complex MM systems as well (Patrick 2004, 2008) and Patrick (2008), following Bailey (1966), categorized JamC modal auxiliaries into two main groups, labeled "Mod-1" and "Mod-2" (Patrick 2008: 619; see Table 6 and ex.10-12).

Table 6 – Rules for combining modal auxiliaries in Jamaican Creole

Jamaican Creole				
Mod-1			Mod-2	
mos(-a, -i)	*'must'*		*kyan*	*'can'*
kuda	*'could'*		*fi*	*'ought to'*
wuda	*'would'*		*hafi*	*'must'*
shuda	*'should'*	*mos*	*mos(-a, -i)*	*'must'*
mait(-a)	*'might, may'*			
wi	*'will'*			

Data from: Patrick (2008: 619, developed from Bailey 1966)

10. Dem *kuda kyan* bai a bred 'they would be able to buy a loaf of bread' (Patrick 2012: 225)
11. Wi *maita kyan* go a di paati lieta 'we might be able to go to the party later' (McCaulsky 2017)
12. Im *mait hafi* do it 'He might/would have to do it' (McCaulsky 2017)

Triple modals are also reported via insertion of modal *mos* between Mod-1 and Mod-2:

13. Wi *wuda mos hafi* riich soon 'we really ought to arrive soon' (Patrick 2008: 620)

In addition to the modals listed in Table 6, JamC also allows combinations with epistemic "semi-auxiliary *sapuosi* as in *sapuosi kyan kom* 'ought to be able to come'" (Patrick 2008: 620) and features *hafi* as a highly grammaticalized auxiliary carrying deontic meaning as well as the modal *fi* 'should,' which is also reported for Gullah (see below).

Table 7 provides a list of MMs reported in mesolectal BahE, as found in the lects of Afro-Bahamians in Eleuthera and New Providence mostly.

Table 7 – List of MMs in the Bahamas

Bahamian English		Bahamian creole
Mesolectal BahE	Abaco Island	Generalized mesolectal/basilectal BahC
mussy coulda *better could* *might haddy* ? *coulda haddy* *might(a) could(a)* *oughta coulda*	*might could* *may can* *might should* *might would* *might can* *might oughta*	*go mussy* *mussy go* *hafta mussy* *mussy hafta* *kuda mussy* *mussy kuda* *kjan mussy* *mussy kjan* *mait mussy* *mussy mait* *shuda mussy* *mussy shuda* *mussy usedta* *mait kjan*

Data from: Holm & Shilling (1982) for mesolectal BahE, McPhee (2003) for 'creolized' Bahamian, and Reaser (p.c., 2017) for BahE on Abaco Island.

Could(a) features prominently, probably due to the fact that *can* is essentially non-existent in "Black Bahamian" (Holm & Shilling 1982: 51); we also find *might(a) could(a)* and *better could*, which closely resemble MMs in the US South. Combinations with *haddy* including *might haddy* 'might have had to' and *coulda haddy* 'could have had to' are perhaps Bahamian innovations. Further, *mussy* (a grammaticalized form of either *must be* or *must have*; Holm & Shilling 1982: 138) has a peculiar status in BahC, particularly when used as a first-tier (which "expresses a speaker's notion of reality about an event or state"; McPhee 2003: 40) in local Creole varieties (*mait kjan* is the only one mentioned by McPhee (2003) that contains true modal auxiliaries). On the other hand, "in the white communities on Abaco especially, you can hear the full complement of multiple modal forms that are still heard in the US South (*may can*, *might should*, etc.). In fact, we found them to be more commonly used there than in the US South" (Reaser, p.c. 2017). Abaco Island was settled by Loyalists after the Revolutionary War, and most of them were "profoundly affected by the Scotch-Irish" (Hackert 2004: 8). Accordingly, the BahE MM system appears to favor epistemic first-

tier elements, with the exception of *mussy*, which can take both positions rather freely, as well as *could(a)* and *oughta*, which function as dynamic and deontic first-tier modals. Second-tier elements have either dynamic or deontic force.
Table 8 lists the inventories reported for Belizean Creole (BelC), Vincentian Creole (VinC), Antiguan Creole (AntC), Bajan (BajC), and Guyanese Creole (GuyC).

Table 8 – List of MMs attested in BelC, AntC, BajC, VinC, and GuyC

BelC	AntC	BajC	VinC	GuyC
? *mos yuz tu*	*hafu kyan*	*must be can*	? *mait kyaa*	*mos kud*
? *mos kod*	*kuda kyan*	*must be could*	? *mait supoostu*	*mos bin kyaan*
? *mosa kudami*			? *mait kod*	*mos kyaan*
	mosa hafu			
			? *mosi kyaa*	*mosii go*
	wi mos		? *mosi hafu*	*mosii go gafu*
			? *mosi gafo*	*mosii wuda gat fu get*
	gon hafu boun		? *mosi kod*	*fu*
			? *go kyaa(n)*	*yuustu mos get fu*
				maita did yuustu
				shuda bin kyaan get fu
				go eebl

Data from: Fennell & Butters (1996) for BelC, Sheperd (1993) and Ballester (2011) for AntC, Collymore (1970) for BajC, Prescod (p.c., 2017) for VinC, and Gibson (1986), Winford (1993) and Devonish (p.c., 2017) for GuyC.

BelC has the smallest inventory; MMs are “rare and usually in mesolectal contexts” (Fennell & Butters 1996: 271), combining epistemic *mos* with the aspectual semi-auxiliary *yus tu* as in:

14. yu *mos yuz tu …* taim dey yuz tu go tuchin ‘you must used to … sometimes they used to go ‘torchin’’ (Fennell & Butters 1996: 271).

The BelC combination (E) + *used to* also features in SAE, AppE and ScotE, as in *would used to*, *might used to*, and *may used to* (see above). Fennell & Butters (1996: 271) cite two more combinations resembling ScotE and NEngE: *must could*, *mos kod* and *mosa kudami*, usually found in its negated form *mustn’t could’ve*, as well as *musta*

coulda, *must be could*, *mussy could*, and *mos kud*, which we also have in AAVE, Gullah, BajC, BahC and StHelE, and GuyC, respectively.

AntC resembles JamC closely, since three out of five attested combinations have a first-tier epistemic auxiliary, namely *kuda kyan*, *mosa hafu*, and *wi mos*. The initial element signifies either 'reasonable conclusion' or 'epistemic possibility,' as in *dem kuda kyan buy bred* 'they would be able to buy bread' (found also in JamC; Ballester 2011: 228). In *mosa hafu*, *mos(a)* carries epistemic force, as it does in *wi mos*:

15. A *mosa hafu* (dey) Sally 'It absolutely has to be Sally' (Sheperd 1993: 174)
16. Karim *wi mos* kom shortly 'Karim will certainly come shortly' (Ballester 2011: 225)

AntC also permits a triple modal, *gon hafu boun* 'will have to be obliged to,' a combination of two deontic modals and an initial future marker.

In VinC, 60% of all MMs have first-tier epistemic *mosi*, as in *mosi kyaa*, *mosi hafu*, and *mosi kod* (in line with epistemic 'high probability' and 'ability' found in other varieties such as Gullah, BahC, BajC, StHelE, and GuyC). *Mosi hafu* is found in Caribbean Creoles generally, such as *mos hafi* in JamC and *mosa hafu* in AntC and *mos kyaa* is found throughout the Anglophone Caribbean (with two exceptions: AntC and BelC) as well as in North American varieties ('must can'). VinC also attests *mait kyaa*, sequencing epistemic 'weak probability' and 'dynamic ability' (resembling *might can*). VinC MMs diverge from those in Scotland, Northern England, and Northern Ireland in that they favor first-tier epistemic 'deductive certainty' or 'high probability' modals, such as *mos(-a, -i)*, which are also common in other CECs (discussion below).

MMs are also found in restructured varieties on the South American mainland (Guyanese Creole (GuyC), Sranan and Saramaccan). GuyC has fewer modal combinability restrictions than other CECs; initial epistemic *mos(ii)* ('high probability' or 'deductive certainty') are favored as first and dynamic *kya(a)n* as second tiers. There are also triple modals with a final deontic auxiliary of obligational force (*gafu*):

17. Shi *mos kud* ron fu di skuul tiim ‘she certainly can run for the school team’ (Winford 1993: 96)
18. Jaan *mosii kuda* bin de a riid ‘John probably could have been reading’ (Gibson 1986: 585)
19. Di maan *mosii go gafu* du am ‘He will probably be obliged to do it’ (Devonish, p.c. 2017)

GuyC *kud* appears to carry a sense of dynamic possibility, while *kuda* conveys past dynamic ability. However, the latter can be semantically signaled by auxiliary *kya(a)n*, combined with the ‘past’ tense marker *bin*, as in:

20. Jan *mos bin kyaan* iit ‘John must have been able to eat’ (Winford 1993: 100)

GuyC also features *go eebl*, where *eebl* functions as a dynamic modal auxiliary with ‘ability’ meaning and *go* as an epistemic future modal, as in:

21. yu *go eebl* du am*?* ‘Will you be able to do it?’ (Devonish, p.c. 2017).

Historically and geographically related, Sranan and Saramaccan, two CECs spoken in Suriname, are categorized as “radical creoles” (Winford and Migge 2008: 693). Both have complex modality systems with exceptionally polysemous and context-dependent modal markers. Table 9 lists the different combinations (with semantic characteristics) for early Sranan, modern Sranan, and Saramaccan. Saramaccan has four lexical modal markers, namely *sa* (from Dutch *zullen*), *musu*, *sá u*, and *abi (f)u*, while modern Sranan has *man*, *kan*/*mag* as well as *musu* and *sa*.

Table 9 – The Modality system of Early Sranan, Modern Sranan, and Saramaccan

Modal category	**Early Sranan**	**Sranan**	**Saramaccan**
Physical ability +	*kan, man va*	*man / kan*	*sa*
Physical ability -	kan	*man / kan*	*sa*
Mental ability + / -			*sá u*
Deontic (root) possibility +	*kan*	*kan*	*sa*
Deontic (root) possibility -	kan	*kan*	*sa*
Permission +	*kan, mag*	*man / kan / mag*	*sa*
Permission -	kan	*man / kan / mag*	*sa*
Epistemic possibility + / -	*(kan)*	*kande*	*sa, kande*
deontic necessity or obligation	*mus*(*u*),	*musu, sa*	*musu, musu u, abi u*
epistemic necessity	*musu*	*sa*	*musu*
future (modal) marker	*o*	*o*	*o*

Data from Borges et al. (2013: 180)

Table 10 shows that in Sranan, the most common initial element is *sa*, preceded by an optional tense marker.

Table 10 – List of MMs attested in Sranan and Saramaccan

Sranan		Saramaccan	
sa musu	*sa man*	*o sa*	*musu musu*
sa musu fu	*o sa man*	*bin o sa*	*musu fu*
	o man		
		sa sà u	*musu sa*
			musu (f)u sa
		sa kan	
			musu sà u

Data from: Winford & Migge (2009) and Winford (2017) for Sranan and Aboh (2006) and van de Vate (2011) for Saramaccan

Sa may signal epistemic possibility or future reference, conveying 'weak probability' (~ *might / may*), 'reasonable conclusion' (~ *would*), and 'reasonable expectation' or 'prediction' (~ *will*). On the other hand, *man* has a positive dynamic interpretation ('can/be able to'; Winford & Migge 2008: 484), so *o man* resembles *will can*. Sranan also has *musu* (both deontic and epistemic) in combination with the modal markers *sa* and *fu*. *Musu* only occurs in final position and carries obligational deontic force,

whereas *sa* adds epistemic information:

22. A *ben sa musu (fu)* taki nanga mi. ‘She would have had to talk to me’ (Winford, p.c. 2017)
23. Te a sji mi a *sa musu fu* taki nanga mi. ‘When she sees me, she will have to talk to me’ (Winford, p.c. 2017)

Saramaccan differs from Sranan in that *musu* obligatorily appears in initial position so that **sa musu* is in fact ungrammatical (van de Vate 2008: 175-6). First-tier *musu* carries epistemic meaning of ‘high probability’ or ‘deduction’ in combination:

24. A *musu sa* wáka ku móo muyée ma á ké ‘he must be able to be in a relationship with more women, but he does not want to’ (van de Vate 2011: 175)

Nevertheless, both epistemic and deontic meanings are reported so that the meaning of *sa* and *musu* is not always clear:

25. A *musu fu sa* sún ‘he must be able to swim’, ‘he probably is allowed to swim’ (van de Vate 2008: 197)
26. I *musu u sa* sikífi e fu i sa féni dí ‘you are obliged to be able to write in order for you to find a job’ (van de Vate 2008: 197)

Moreover, *musu*, *sa*, and *o* can combine with the modal marker *sá u* (probably a phonetic reduction of *sá fu* that comes from Portuguese *sábi* ‘to know’) denoting ‘mental ability’ (van de Vate 2008: 192):

27. Abitimoo a *o sá u* lési ‘In a while, she will know how / be able to read’ (van de Vate 2008: 199)
28. A *sa sá u* mbéi di ladio ‘s/he may know how / be able to fix the radio’ (van de Vate 2008: 199)

The future marker *o* ‘reasonable expectation’ combines with epistemic *sa* ‘neutral probability,’ which semantically corresponds to ~*will can* and ~*may can*, respectively.

On the other hand, the necessity modal *musu* has both deontic and epistemic meaning so that *musu sá u* means either 'is obliged to be able to' or 'certainly knows how to.' *Musu* may have reduplication, as in *musu a musu gó a wósu* 'he definitely must go home' (Aboh 2006: 15), semantically resembling JamC's *mos hafi* (which is not reported for Saramaccan). Additionally, *sa* may also be combined with *o* and *kan*:

29. A *sa kan* táa Freddy fufúu í móni tu 'It might be the case that Freddy stole the money' (van de Vate 2011: 165)
30. Dí muyée *á ó sa* palí akí 'The woman will not be able to give birth here' (van de Vate 2011: 203)
31. A *bi o sa* ta sún 'He would be able to swim' (van de Vate 2008: 199)

This is semantically remarkable as *sa* carries epistemic value, and *kan* at the same time appears to incorporate epistemic meaning. The addition of the complementizer *táa* yields an equivalent to *it might could be that*, which would be unacceptable in SAE.[2] *Sa* has a dynamic meaning of ability and is combined with the future marker *o*. The latter may be preceded by the tense marker *bi(n)*, thus giving *bi o* an epistemic sense of 'reasonable conclusion.' In this sense, Saramaccan locates epistemic modals on the left and dynamic or deontic modals on the right, thus following the global E + R pattern (see above). The situation becomes even more complex as both Sranan and Saramaccan prefer dynamic second-tier elements, thus aligning with ScotE, which favors *can* and *could* as final modal elements, as do most of the other CECs and North American varieties. As for the initial element, Sranan most commonly allows *sa*, while Saramaccan has either *sa* or *musu*, the latter permitting an epistemic deductive meaning, which is not reported for Sranan.

[2] Di Paolo (1986) analyzed the acceptance of *might could* as conveying dynamic (ability), epistemic (possibility), and deontic (permission) meaning, the second and third being of low and middle acceptance. According to Bernstein (2003: 113) "it makes sense to see *I might could do it* as combining a degree of willingness and ability (dynamic modality) with a degree of uncertainty (epistemic modality); that is, 'I'm willing to do it, but I'm not sure I have the ability.' A sentence such as 'It might could be rape' sounds wrong to native Southerners because it has only epistemic value; it lacks the dynamic function associated with *might could*."

South Atlantic: St. Helenian and Tristan da Cunha English

St. Helena English (StHE), the oldest variety of Southern Hemisphere English, saw language and dialect mixing when the British founders established a community along with French and West Africans (Schreier 2010: 224). Tristan da Cunha English (TdCE) emerged more than a century later and, like StHE, is highly contact-based, "a hybrid of various input varieties that most likely were working class and nonstandard" (Schreier 2004: 392), with StHE as a principal donor variety. Both varieties have MMs, though their inventories are rather small (see Table 11).

Table 11 – List of MMs attested in St. Helenian English and Tristan da Cunha English

St. Helenian English	Tristan da Cunha English
mussy can *mussy could* *may can* *can may* *might would*	*may can* *may can't* *must can* *might can* *may could* *would could* *must could* *mussy useta* *might may* *will may* *may would* *might would*

Data from: Schreier (2008) for St. Helenian English and Schreier (2004) for Tristan da Cunha English

The two varieties share *may can* (epistemic modal of 'neutral probability' and dynamic 'ability') and *must can* ('high probability' or 'deductive necessity' – note, though, that StHE has *mussy can* and *mussy could*, which could be indicative of ongoing grammaticalization. In line with Schreier (2004: 398), TdCE has close affinities with Scottish and American MM combinations in that it favors *may can* and *must can*. While the overall inventory of TdCE is larger, StHE mostly relies on *mussy* (and thus aligns with Caribbean Creoles).

A geotypological profile of multiple modality

After the descriptive profile of multiple modality in individual varieties, we now turn to a general discussion of geotypology and regional variation throughout the wider Atlantic Ocean. We concentrate on parallels and differences in the Northern Atlantic first, then

detail the importance of sociohistorical relationships between various regions – most notably the US South and the Caribbean, but also within the Caribbean and from Scotland to Tristan da Cunha. Finally, we present our evidence for the existence of what we call the "Atlantic multiple modal belt."

Figure 4 shows that North American varieties strongly favor first tiers with 'weak probability' (56%), a preference explained by the fact that *might could* is very common across varieties there. These initial modals are found in the British Isles as well (though less frequently, i.e. 33% of all varieties of the region) as Scottish and Northern English varieties have a preference for *should can* or *will can*. The situation in the Caribbean is reversed: first-tier auxiliary with 'high probability' or 'deductive certainty,' e.g. *must can*, are the preferred option.[3] Throughout the Caribbean region, we indeed find a strong preference for first-tier modals such as *musu*, *mosa*, *mosii*, or *must(a)* (48%), while 'weak probability' modals are proportionally disfavored, representing only a small percentage of the MM inventories of the region (10%).

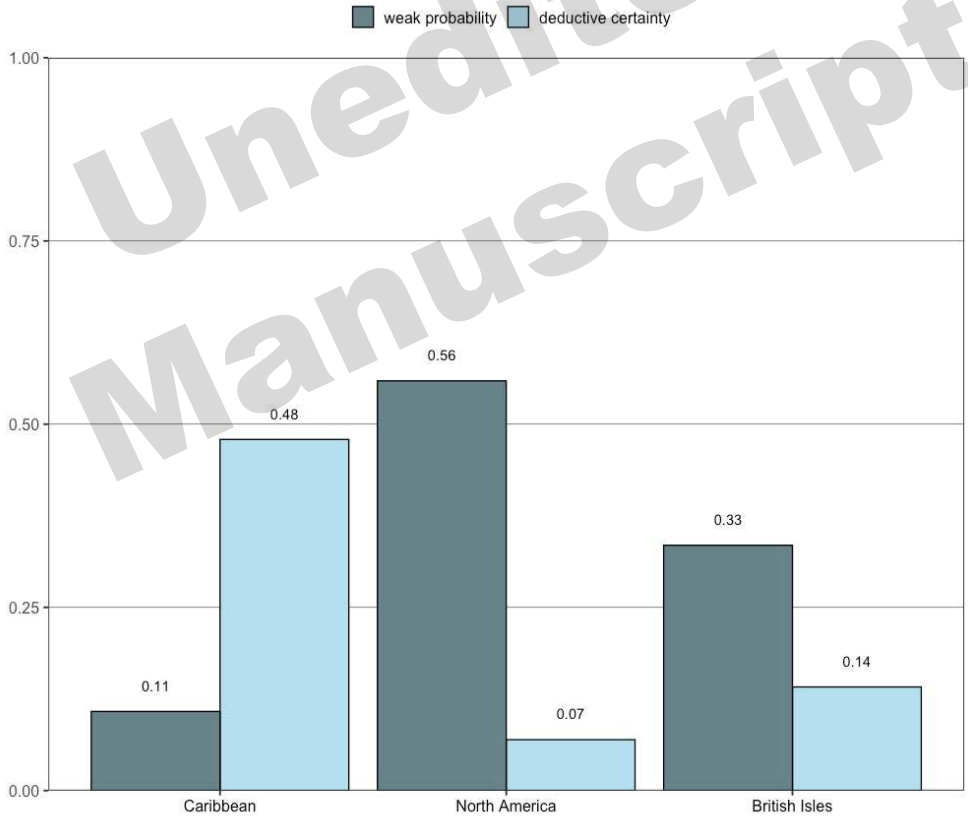

Figure 4 – Percentages of first-tier modals denoting 'weak probability' and 'deductive certainty' in the Caribbean, North America, and the British Isles

[3] Even though the sequence epistemic 'reasonable expectation'/'future' and deontic 'obligation' is possible in some creoles, e.g. *sa musu* in Sranan, it is striking that the combination *must will* has never been attested.

Second-tier elements are equally diagnostic (Figure 5). Dynamic modals such as *can*, *kyan*, or *kyaa* are preferred in the Caribbean (34%), while modals such as *could*, *kod*, or *kuda* are found in 21% of all combinations across the region. Varieties in North America and the British Isles, on the other hand, tend to favor variants of *could* as second tiers (33% and 49%, respectively). Again, this preference is a function of the high frequency of *might could* (America), *would could* and *should could*, respectively (Scotland, Northern England).

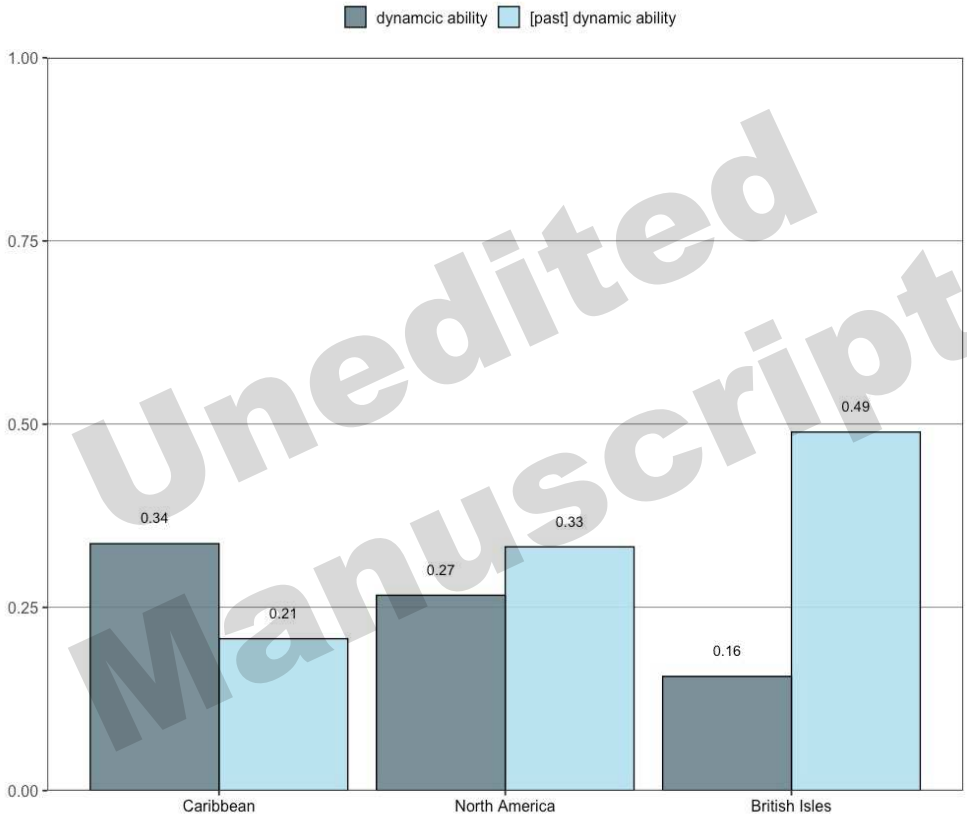

Figure 5 – Percentages of second-tier modals denoting 'dynamic ability' and '[past] ability' in the Caribbean, North America, and the British Isles

Accordingly, first-tier modals strongly differentiate varieties, particularly if the ratios of first-tier epistemic elements, i.e. the proportional relationship between 'weak probability' and high probability' or 'deductive certainty' (~ '*might* ÷ *must*'), are considered across varieties. Figure 6 displays the distributions of these ratios in the Caribbean, North America and British Isles. While there are regional differences, first-tier 'weak probability' modals far surpass those of 'high probability' or 'deductive

certainty' in British and North American varieties. CECs have the opposite tendency, which strongly suggests that MMs developed under different ecolinguistic circumstances and contact scenarios (see below).

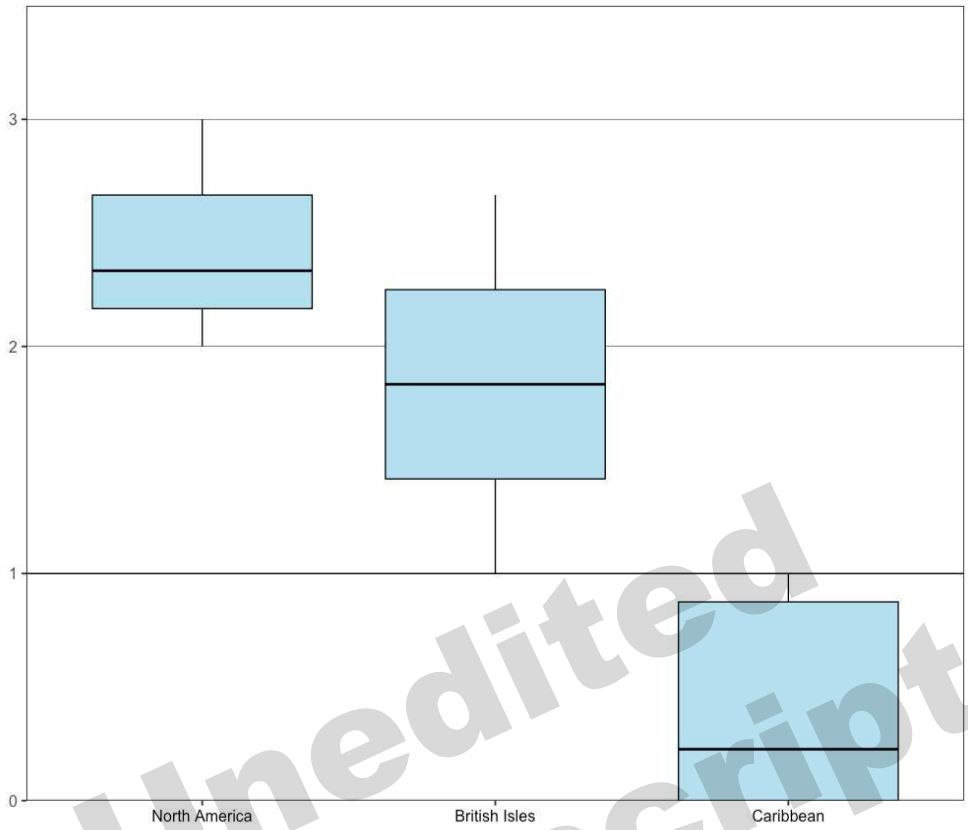

Figure 6 – Box plots showing the distribution of ratios between first-tier epistemic modals of 'weak probability' and 'deductive certainty' in North America, the British Isles, and the Caribbean

The ratios for distinctive variety types (Figure 7) indicate that high-contact L1s such as BahE and AAVE are positioned between traditional first languages and creoles, thus supporting Fennell & Butters' (1996) claim that American and Caribbean varieties have different MM systems and that CECs may have subsequently influenced North American varieties (see below).

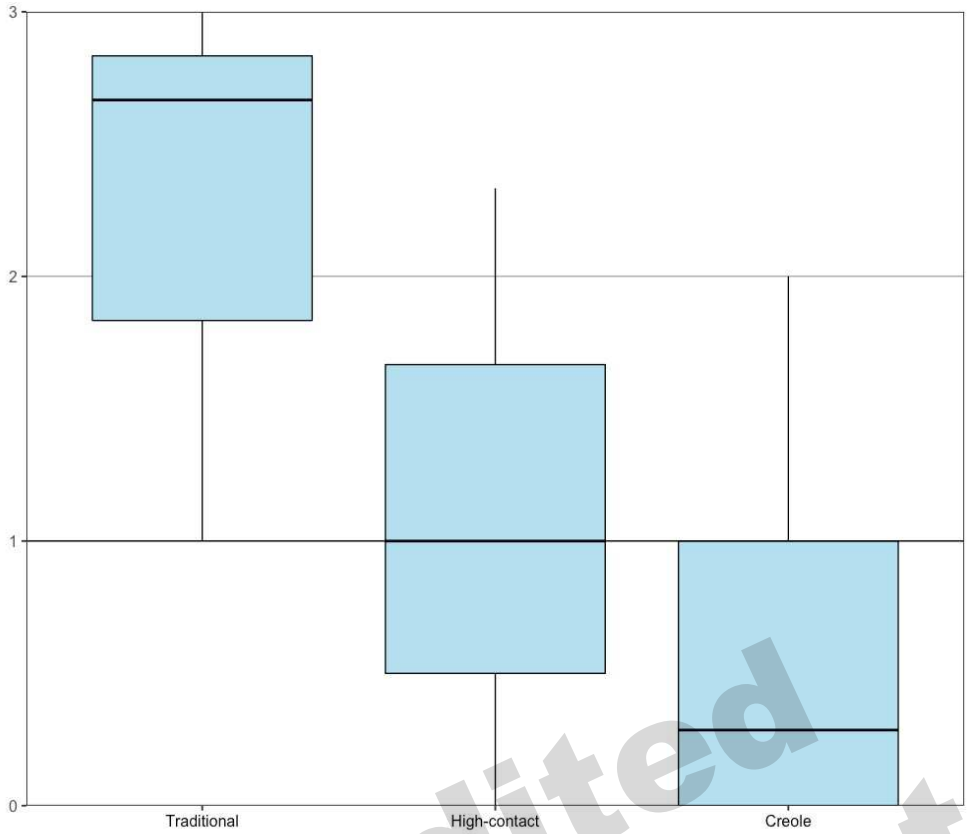

Figure 7 – Box plots showing the ratio between first-tier epistemic modals of 'weak probability' and 'deductive certainty' in the different variety types

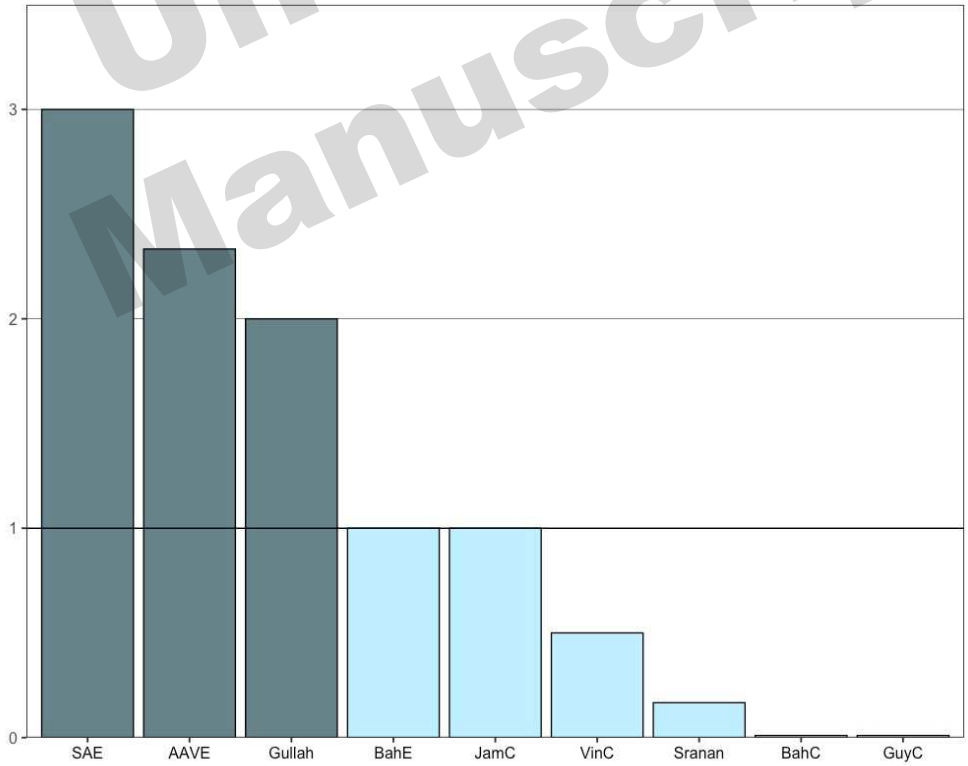

Figure 8 – Ratios between first-tier 'weak probability' and 'deductive certainty' in selected North American and Caribbean varieties

The existence of a continuum of varieties (by variety type and region) receives a

further boost by calculating the ratios between first-tier 'weak probability' and 'deductive certainty' in North American and Caribbean varieties (Figure 8). The representation of first-tier ratios suggests a continuum that ranges from the US South to the southernmost CECs, with two major clusters: an American one, including AAVE and Gullah, and the Caribbean one (see discussion below).

The two South Atlantic varieties, TdCE and StHE, have distinct and partly overlapping MM systems. TdCE has a larger inventory; about a dozen combinations are reported, and there is a strong preference of first-tier 'weak probability.' StHE, on the other hand, favors 'deductive certainty,' mostly via (possibly grammaticalized) *mussy*. This would suggest that TdCE selected its MMs from Lowland Scottish and Eastern New England English, two of the most influential donors (Schreier 2004), whereas the influence of StHE was limited here by contrast. As Zullo (unpubl. ms.) suggests, *may can* seems to be a rather new development in ScotE, so this might emphasize the impact of US donor sources (but this remains speculation). *Must can*, on the other hand, is found in traditional L1s on both sides of the Atlantic: Scotland (Brown 1991), Texas (Hasty 2012), Florida (*LAGS*), and AAVE in Illinois (Herndobler & Sledd 1976). *Mussy* is different and has been reported in various locations throughout the Caribbean: *must be could* in Gullah and BajC, *mos kud* in GuyC, *musta coulda* in AAVE, and *must(n't) could('ve)* in ScotE and NEngE. *Mussy can* is found in AAVE and BajC, *mussy kjan* in BahC, *mosa kyan* in JamC, and *must can* in SAE, ScotE, and NEngE. These cross-Atlantic similarities suggest that first-tier *mussy* was brought to St Helena via several sources (multiple causation) – mostly Scottish and American English *must(n't) could('ve)*, as there was hardly any human traffic between St Helena and the Caribbean.

It is not a straightforward task to pinpoint donors for SAE and CEC varieties either. A British heritage seems likely for some Caribbean MMs. For instance, we note that JamC *mus' should* (Cassidy 1961: 61) is found in Scotland but not in the US. *Kuda kyan* may be related to *could can to* in late 19th-century Scots (Burgess 1891: 21). There are some exceptional cases of possible local innovation (combinations with final or central *mos* in JamC), but by and large, there is a considerable overlap between the MM systems, which suggests extensive contact and diffusion.

The next question is how the CEC patterns evolved to become semantically and structurally different both from British and American varieties. As Patrick (2004), Rickford (1986), Mufwene (2008) and others have argued, there is little doubt that

most modal features (both in morphological form and lexical content) were imported via British donors (Fennell & Butters 1996). During the formation phase of JamC, Scottish dialects were present alongside British varieties from Ireland and the West of England, whereas African languages of the Kwa and Bantu families also played an important role (Patrick 2004: 408; cf. Mufwene 2008). Rickford (1986) demonstrated the linguistic impact of Scots, Northern Irish, and Irish varieties on the emerging CECs. On the other hand, while MMs were present in the input varieties, they were restructured via language contact in the respective local scenarios, which could certainly account for some of the similarities attested here ("basilectal JamC differs radically from native English dialects, due to extensive language contact resulting in structural mixing"; Patrick 2004: 409). As Nagle (1994) has argued, dynamic productive second-tier elements with epistemic modality (*can* and *could*) are preferred in the British Isles, the US and the Caribbean, whereas (many) CECs combine future markers and dynamic modals, such as *wi kyan*, *go kyan*, and *go eebl*. This would suggest contact-induced change via substrate influence and structural transfer:

> double modals in AAE and Gullah, as well as combinations such as *bin kyan* 'could' and *bin mos* 'had to' in CECs, are as much a consequence of the loss of the infinitive in these varieties (under the determinative influence of Kwa languages) as of the existence of double modal structures (e.g. *might could*) in nonstandard varieties of the lexifier. This state of affairs affects how we may speak of continuities, since it seems that some African continuities would not have prevailed without the complicity of the lexifier itself. (Mufwene 2008: 43)

Further, internal migration (both within the West Indies and across to the US plantations) would have favored more intense contact and diffusion of different systems. From the 17th through the 18th century, the migratory networks involved movements "from St. Kitts to Barbados and other islands […], from Barbados to Suriname and Jamaica […], from Barbados to South Carolina […], from South Carolina to Georgia […], and from Barbados and other islands to Trinidad and Tobago and to Guyana" (Mufwene 2008: 43). Escure (2008: 741) emphasizes that "Belizean structure has been linked to Jamaican influence" and Hackert & Holm (2009: 19) show that Afro-Bahamian was highly influenced by Gullah speakers, who cross-migrated in

the 18th century. In their discussion of Ayres' (1933) article (the first substantial examination of Bermudian English phonology), Cutler, Hackert and Seymour draw attention to one of his conclusions: "It is interesting that Ayres should draw parallels between Bermudian and Gullah, the creole spoken in the South Carolina and Georgia lowlands and offshore Sea Islands; these shared features underscore the view of a historical Bermuda-Bahamas-Carolina triangle" (2006: 2067). As a consequence, human traffic between the American mainland and Caribbean islands established supraregional networks that would have favored transport, interaction, and mixing of originally distinct systems. MMs would thus have been transported from the Caribbean across to the Atlantic seaboard and from there further inland, where (originally Caribbean) MM combinations merged with more Scottish/British ones that had become established in the dialects of Anglo-American settlers. This has been proposed for the diffusion of other morphosyntactic features: Tillery (2015: 157) suggested that copula absence, auxiliary absence, 3rd person singular zero, and invariant *be* are more frequent in the speech of Anglo-Americans who "tend to live in close proximity to African Americans" and Feagin (1991: 161) offered a similar trajectory path for the diffusion of completive '*done*.'

To sum up: the geotypological analysis of MMs in Great Britain, North America and the Caribbean suggests that we are looking at historically related yet semantically and structurally different systems. Anglo AmE varieties are similar, yet not identical, to Scottish and Northern English ones, which suggests a direct heritage and some modifications via koinéization. Crucially, the overall inventory of Anglo AmE is in fact more extensive and complex than the British ones (allowing more combinations and having higher numbers of permitted MM sequences overall). Whereas the diverging patterns may be the result of dialect contact and mixture (Trudgill 1986, 2004), they certainly did not trigger simplification and the local AmE systems are at least as complex as the British one. The situation in the Caribbean is different in that we find a somewhat smaller repertoire of MM combinations and regional differences. Varieties that had more enduring contact with British donors (e.g. the Bahamas) have higher inventories than those where there was limited input (e.g. Sranan), which indicates contact-induced simplification.

This leads us to conclude that the Caribbean and American/British MM systems represent two categories distinguished by tier placement and combinatory preferences, which can be explained historically. Following colonization from the 17th

century onwards, these systems, originally brought across the Atlantic by settlers from Northern England and Scotland, were adopted when local varieties nativized, though the locally differing feature pools and contact ecologies triggered individual systems in various settings (which might explain the differences sketched above). Later on, as a result of continuing human traffic, Caribbean MMs were brought to North America, where they competed with pre-existing British ones and ultimately merged in new heterogeneous patterns that contained elements of both clusters. Such convergence would explain why some of the largest MM inventories are found in Georgia and the Carolinas, as the impact of speakers with both systems would have been strongest here (see below).

There is some sort of continuum, starting from Pennsylvania and spreading south-west into the Appalachian Highlands, into the US South, onto the Seaboard and into the Caribbean. Based on a calculation of the ratios of first-tier 'weak probability' and 'deductive certainty' in selected North American and Caribbean varieties, SAE had the highest ratio, followed by AAVE and Gullah, BahE, JamC, VinC, BahC and GuyC. Gullah, whose Creole status is not contested, was placed in-between two high-contact varieties, AAVE and BahE, which shows that MMs are geotypologically indicative. Further support comes from a 'splits graph' (Figure 9, adapted from Kortmann & Wolk 2012: 925), which illustrates typological affiliations between varieties based on an aggregate of morphosyntactic features.

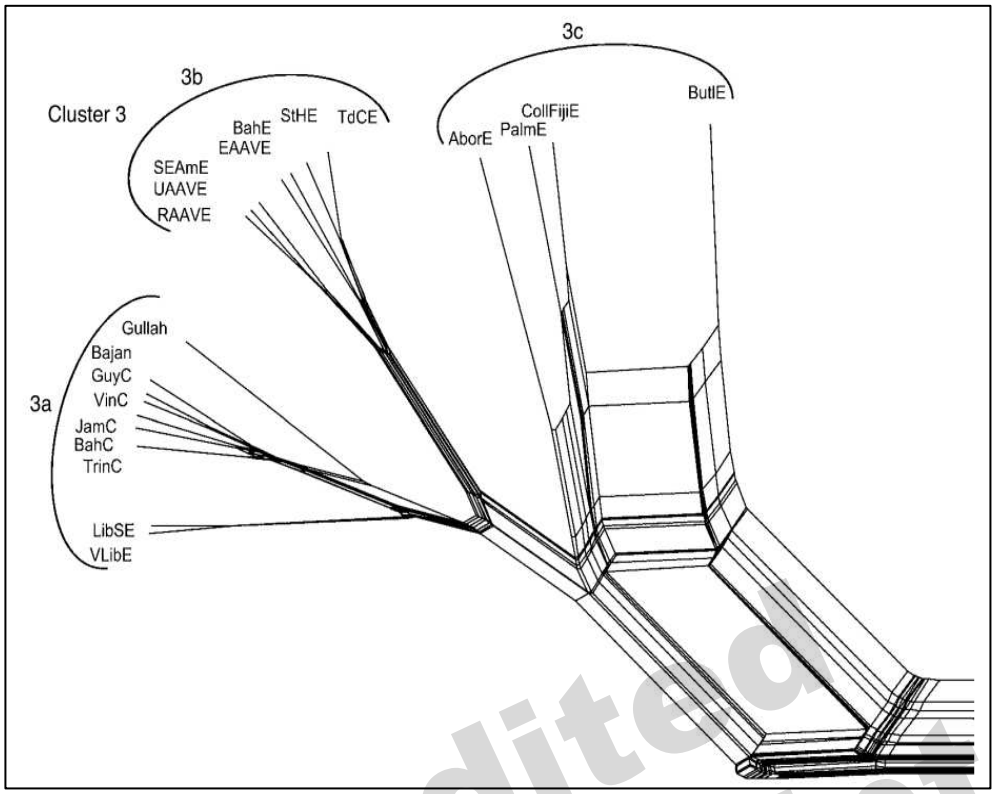

Figure 9 – Detail of the NeighborNet diagram for the complete set of WAVE varieties: the top left branch (adapted from Kortmann & Wolk 2012: 925)

We note that cluster 3b "has a strong geographical signal in that it is dominated by North American varieties, notably SEAmE and the three AAVEs, which Gullah […] is positioned next to [in Cluster 3a]" (Kortmann & Wolk 2012: 925), where of course we also find most of the CECs. The presence of a continuum (as a result of regional convergence) also emerges in Grieve et al.'s (2015: 56-7) study of geocoded tweets, where *must can* and *might can* are more frequent in the Lower South and African American varieties, while *might could*, *might should*, and *used to could* appear to be an Upper South feature. Although this needs to be studied in more detail, cluster 3b can be interpreted to suggest that AppE is placed at one end of the continuum, with its higher ratio of first tier 'weak probability' and 'deductive certainty', followed by Lower Southern American English and both AAVE varieties. A geo-typological approach would lend itself ideally here, as the Lower Southern varieties had more historical language/dialect contact with rural and urban AAVE varieties than AppE – which, as we noted, has the overall pattern of first tiers with weak probability (*may could, may should, may will*; cf. Figure 3 for regional differences in the American Southeast).

Our analysis further suggests that Gullah takes a position between the Caribbean and North American traditional and high-contact varieties, thus providing a link in a continuum of distinct varieties. Consequently, our geo-typological study of multiple modality is in line with previous research. Montgomery (2015: 98), for instance, points out that "a generation of comparative studies by creolists has demonstrated that, from no later than the eighteenth century, the African American speech of the Carolina/Georgia Low Country formed a continuum with the Caribbean" and it has long been recognized that Gullah is closely connected to "the Bahamas, Jamaica, Belize, the Virgin and other Leeward islands, Trinidad, Barbados, Guyana, Surinam" (Cassidy 1986: 36; cf. also Hackert & Huber 2007). In terms of MMs inventory and compositionality, Gullah and the adjacent varieties close the gap between the two main (US mainland and Caribbean) types, thus forming the Atlantic MM belt.

Conclusion: evidence for a Multiple Modal Belt

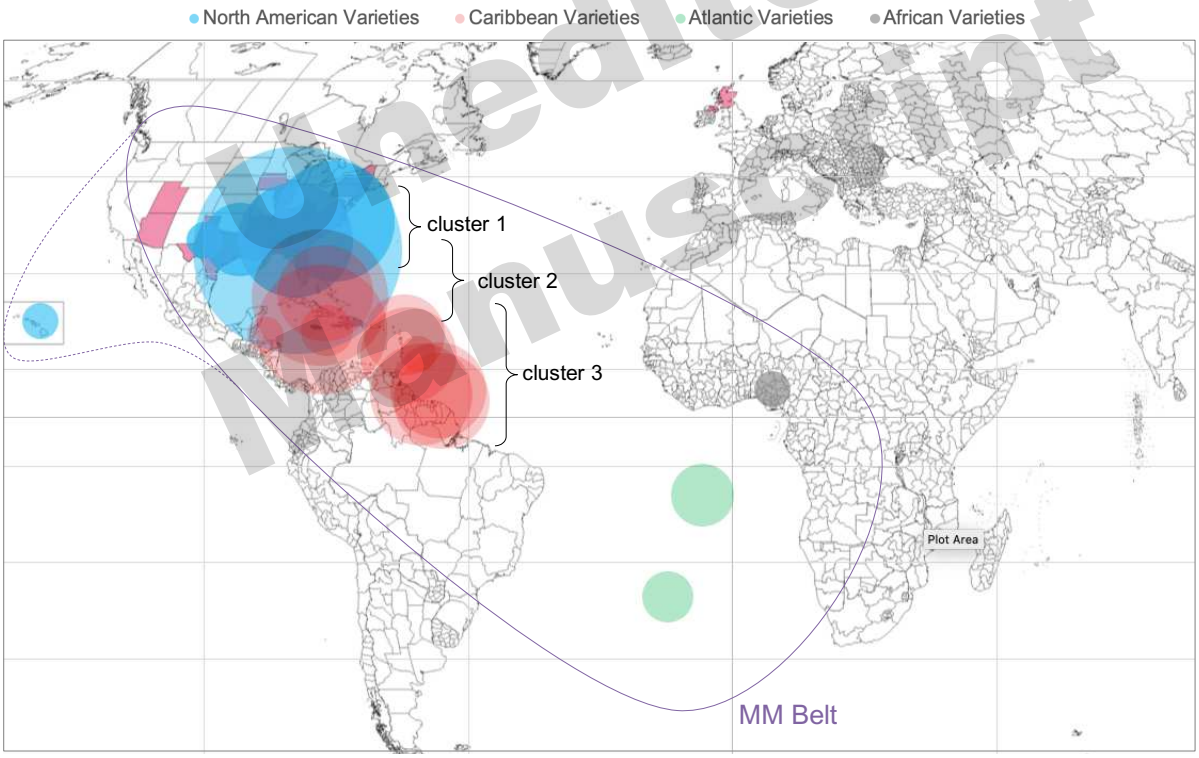

Figure 10 – the MM Belt: bubble chart representing the MM inventories and their capacity in all MM varieties (Scotland and Ulster are excluded)

Our geo-typological examination has shown that MM systems are widespread in the Atlantic region, found in the British Isles, North America, the Caribbean, and the South

Atlantic Islands. The varieties form a complex network, characterized by semantic and compositional similarities yet differentiated by region and variety type, and represent a continuum, the Multiple Modal Belt (Figure 10). The clusters in the belt range from North America through most of the Caribbean Islands into the South Atlantic Ocean and has a common denominator: the diagnostic frequency of right-tier elements signifying dynamic ability (~*can*). Further, the belt may be subdivided into three main clusters: in northernmost traditional dialects (US and British Isles), first-tier epistemic markers of 'weak probability' (~*might* or ~*may*) are favored. This tendency decreases in cluster 2, African American varieties and American/Caribbean high-contact L1s, which have ~*might*, ~*may* ≈ ~*must* as first tiers, whereas cluster 3 includes most of the CECs with a strong preference for left-tier modals signifying 'high probability' or 'deductive certainty' (~*must*). The clusters' semantic and structural differences are the result of direct transplantation of English/Scottish features to North American colonies (and subsequent modifications via dialect contact) as well as restructuring via language contact (substratum effects) in the Caribbean. Migration and human traffic (in the intermittent Atlantic seaboard) gave rise to a continuum so that varieties like Gullah have come to represent a mixed system with both Anglo GenAm and CEC combinations.

Our findings have two major implications. First, MMs are more diffused than previously assumed, almost to the extent that they represent a "pan-Atlantic areoversal" (see Zullo unpubl. ms. for a discussion of areoversal and varioversal status). Second, British MM combinations spread not only into the US but also into the Caribbean, where they evolved in different geolinguistic ecologies, so that the geo-typological affiliations between North America and the Caribbean across the three clusters are indicative of Caribbean influence on US varieties. In conclusion, MMs are not only indicative of settlement patterns and sociohistorical dialect origins but carry potential for dialect typology and cross-varietal comparison as well. These results provide a basis for further syntactic analyses of multiple modality, which remain a research desideratum for the future.

Appendix

List of English varieties analyzed (in alphabetical order; with abbreviations, where applicable)

African American English (AAE), both rural (RAAVE), and urban (UAAVE)

Antiguan Creole (AntC)

Appalachian English (AppE)

Bahamian English (BahE)

Bahamian Creole (BahC)

Bajan (BajC)

Belizean Creole (BelC)

Chicano English (ChicE)

Colloquial American English (ColAmE)

(pure) Fiji English (PFijE)

Gullah

Guyanese Creole (GuyC)

Hawai'i Creole (HawC)

Jamaican Creole (JamC)

Maltese English (MalE)

New Zealand English (NZE)

Nigerian Pidgin (NigP)

Northern Irish English (NIrE)

Ozark English (OzE)

Scottish English (Sc

Southeast American Enclave Dialects (SAED)

Saramaccan

Sranan

St. Helenian English (StHE)

Tristan da Cunha English (TdCE)

Vincentian Creole (VinC)

Table 12 – Table sample of the compiled corpus for data analysis

Region	Source	Year	Variety	Type	Region / Locality	*Mod1*	*Mod2*	Mean1	Mean2	Neg/Aux	T
Car	Sheperd	1993	AntC	EnCreole	St. Kitts / Barbuda / Antigua	*hafu*	*kyan*	have to	can	N2	1
Car	Ballester	2011	AntC	EnCreole	St. Kitts / Barbuda / Antigua	*kuda*	*kyan*	would	can		0
Car	Holm & Shilling	1982	BahE	HighC L1	Eulethera / New Providence	*better*	*could*	better	could	A2	0
BritIsles	Melchers	2008	Scots	Trad L1	Orkney	*'ll*	*can*	will	can	N1/2	1
BritIsles	Calderwood	1756	Scots	Trad L1	Scotland	*will*	*can*	will	can	N1/2	1

Key: Mean 1 and Mean 2 are rough translations of *Mod1* and *Mod2*. N2 signifies that negation occurs after the second modal. A2 signifies auxiliary *have* occurs after the second modal. T equalling 1 means the compound is tense-matched.

Table 13 – Semantic meaning of modals in MMs according to Palmer (1979) and Nagle (1994)

	Epistemic	Dynamic	Deontic
might	weak probability		
may	neutral probability		permission
should	extreme or logical likelihood		obligation or suggestion
ought to	extreme or logical likelihood		obligation or suggestion
must	extreme (deductive) probability		strong (moral) obligation
would	reasonable conclusion		
could	possibility	ability	
will	reasonable expectation,		
can	possibility (Neg)	ability	
shall	futurity		

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